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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/710,892 | 11/14/2000 | Hiroaki ITO | P66074US0 | 5787 |

136 7590 02/27/2003

JACOBSON HOLMAN PLLC
400 SEVENTH STREET N.W.
SUITE 600
WASHINGTON, DC 20004

EXAMINER

PATTERSON, MARC A

| ART UNIT | PAPER NUMBER |
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1772

DATE MAILED: 02/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.



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Office Action Summary

Application No.

09/710,892

Applicant(s)

ITO ET AL.

Examiner

Marc A Patterson

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1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With regard to Claim 1, the phrase 'any two materials' is indefinite, because it is unclear whether any two materials are actually being claimed, or if one must be a fluororesin as stated in the claim. With regard to Claim 16, the abbreviation DBU is indefinite because it has not been defined in the claim. For purposes of examination, it will be assumed that the abbreviation refers to diazabicycloundecene. Correction and / or clarification is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 7 – 9, 14, and 18 – 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Yokoe et al (U.S. Patent No. 5,919,326).

With regard to Claim 1, Yokoe et al disclose a fuel hose (column 3, lines 60 – 67; column 4, lines 1 – 3) comprising a single layer of a fluororesin and an outer layer of thermoplastic resin,

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wherein the inner and outer layers are formed by co – extruding materials for the layers (column 3, lines 60 – 67; column 4, lines 1 – 3); the layers are molded from fluoro-resin and thermoplastic, respectively, therefore a melt viscosity ratio of 1 : 40 or below is inherent to the layers disclosed by Yokoe et al.

With regard to Claim 2, the fluoro-resin is an ethylene – tetrafluoroethylene copolymer (ETFE; column 4, line 65).

With regard to Claims 7 and 8, the fluoro-resin contains carbon black, which is an electrically conductive material (column 5, lines 19 – 35).

With regard to Claim 9, the fluoro-resin has a resistance (volume resistivity) not exceeding 10^{10} Ωcm (column 5, lines 19 – 35).

With regard to Claim 14, the thermoplastic resin is a polyamide (column 7, lines 7 – 18).

With regard to Claim 18, Yokoe et al teach that thermoplastic and EPDM rubber are equivalent in the making of the outer layer (column 3, lines 60 – 67; column 4, lines 1 – 3); the claimed aspect of the thermoplastic being an ‘ethylene – propylene copolymer’ therefore reads on Yokoe et al.

With regard to Claim 19, the outer layer is surrounded by a protective rubber layer (sheath; column 9, lines 53 – 67).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 – 6, 10 – 13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoe et al.

Yokoe et al. disclose a fuel hose comprising ethylene – tetrafluoroethylene copolymer (ETFE) or tetrafluoroethylene – hexafluoropropylene – vinylidene fluoride terpolymer (THV) inner layer and polyamide outer layer as discussed above. With regard to Claims 3, 5 and 6, Yokoe et al fail to disclose ETFE which is formed of ethylene and tetrafluoroethylene in a molar ratio in the range of 70 : 30 to 30 : 70, and THV which is formed of tetrafluoroethylene, hexafluoropropylene and vinylidene fluoride copolymerized in a molar ratio 40 to 85 : 5 to 20 : 5 to 55. However, Yokoe et al discloses ETFE which is formed of ethylene and tetrafluoroethylene in a molar ratio in the range of 50 : 50, and THV which is formed of tetrafluoroethylene, hexafluoropropylene and vinylidene fluoride copolymerized in a molar ratio 33.3 : 33.3 : 33.3 (page 6, lines 28 – 37; page 7, lines 1 – 7).

Thus, one of ordinary skill in the art would have recognized that the molar ratios of the ETFE and THV would be readily determined through routine optimization depending on the desired end results, as shown by Yokoe et al.

Therefore, it would be obvious for one of ordinary skill in the art to vary the molar ratios of the ETFE and THV, since the molar ratios would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

With regard to Claim 4, Yokoe et al fail to disclose a fuel hose comprising an additional monomer comprising fluoroolefin.

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Spohn teaches the use of an ETFE copolymer layer which further contains a monomer which is a fluoroolefin (perfluorobutyl ethylene; page 6, line 34) for the purpose of producing a fuel hose which has an excellent chemical resistance (page 1, lines 8 – 24).

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for an ETFE copolymer layer which further contains a monomer which is a fluoroolefin in Yokoe et al in order to produce a fuel hose which has an excellent chemical resistance as taught by Spohn.

With regard to Claim 10, Yokoe et al. fail to disclose a fluororesin which contains a reactive functional group consisting of $\text{CF}_2=\text{CFOCF}_2\text{CF}(\text{CF}_3)\text{OCF}_2\text{CF}_2\text{COOH}$, formed by copolymerizing the fluororesin with an unsaturated monocarboxylic acid containing fluorine.

Spohn teaches the use of a fluororesin layer containing a reactive functional group (it is adhesively activated by having a compound grafted thereto which imparts polar functionality (page 7, lines 8 – 35), for the purpose of producing a fuel hose which has an excellent chemical resistance (page 1, lines 8 – 24).

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a fluororesin layer containing a reactive functional group in Yokoe et al. in order to produce a fuel hose which has an excellent chemical resistance as taught by Spohn.

With regard to Claims 11 – 13, the reactive group is $\text{CF}_2=\text{CFOCF}_2\text{CF}(\text{CF}_3)\text{OCF}_2\text{CF}_2\text{COOH}$, and is therefore a carboxyl group (page 7, lines 8 – 35); the reactive functional group is therefore formed by copolymerizing the fluororesin with an unsaturated monocarboxylic acid containing fluorine.

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With regard to Claim 15, Yokoe et al. fail to disclose a polyamide layer which comprises the modification of the carboxyl groups of the polyamide with amino groups resulting in amino groups in the amount of 1×10^{-5} gram – equivalent per gram.

Spohn teaches the modification of the carboxyl groups of a polyamide layer of a fuel hose with amino groups (excess diamine is added to provide an excess of amine end groups over carboxyl end groups; column 3, lines 27 – 34) for the purpose of producing a fuel hose which has an excellent chemical resistance (page 1, lines 8 – 24).

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for the modification of the carboxyl groups with amino groups in Yokoe et al. in order to produce a fuel hose which has an excellent chemical resistance as taught by Spohn.

With regard to Claim 17, Spohn teaches a modification resulting in amino groups in the amount of 1×10^{-5} gram – equivalent per gram (an excess of amine end groups over carboxyl end groups; column 3, lines 27 – 34).

Thus, one of ordinary skill in the art would have recognized that the number of amino groups in the polyamide would be readily determined through routine optimization depending on the desired end results as shown by Spohn.

Therefore, it would be obvious for one of ordinary skill in the art to vary the number of amino groups in the polyamide, since the number of amino groups would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

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7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoe et al. (U.S. Patent No. 5,919,326) in view of Murakami et al (Japanese Patent No. 08104805).

Yokoe et al. disclose a fuel hose comprising an inner layer of a fluororesin and outer layer of polyamide as discussed above. Yokoe et al. fails to disclose a polyamide containing a diazabicycloundecene salt.

Murakami et al teach the addition of a diazabicycloundecene salt to the polyamide layer of a multilayer hose, for the purpose of increasing the interlaminar adhesion strength (Abstract).

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a diazabicycloundecene salt in Yokoe et al. in order to increase the interlaminar adhesion strength as taught by Murakami et al.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoe et al. (U.S. Patent No. 5,919,326) in view of Stanley (U.S. Patent No. 5,005,613).

Yokoe et al. disclose a fuel hose comprising an inner layer of a fluororesin and outer layer of polyamide as discussed above. Yokoe et al. fail to disclose a fuel hose which is corrugated.

Stanley teaches the corrugation of a fuel hose for the purpose of improving the flexibility as compared to a smooth hose (column 1, lines 62 – 68; column 2, lines 1 – 9).

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for corrugation in Yokoe et al. in order to improve the flexibility as taught by Stanley.

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Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc Patterson, whose telephone number is (703) 305-3537. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by phone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (703) 308-4251. FAX communications should be sent to (703) 872-9310. FAXs received after 4 P.M. will not be processed until the following business day.

Marc A. Patterson, PhD.

Marc Patterson
Art Unit 1772

Harold Pyon
HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772 3/25/02